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TUSAYAN

NATIONAL FOREST

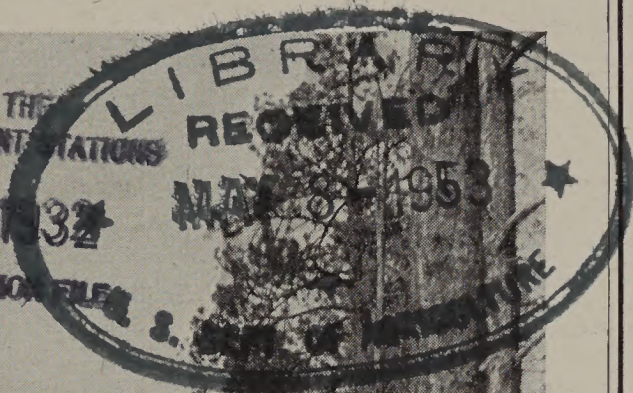
ARIZONA



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EXPERIMENT STATION FILE



The Loop Drive

F-221232

U. S. DEPARTMENT OF AGRICULTURE

2 U.S. FOREST SERVICE
2a SOUTHWESTERN REGION

Prepared by Regional Forester

Albuquerque, N. Mex.

3c 1932

Tusayan National Forest

Arizona

The Tusayan National Forest was named for the Hopi Indian province of Tusayan in northern Arizona, described by the chroniclers of the Coronado expedition of 1540-1542. It is located in the north-central part of the State and consists of two separate divisions. The Williams Division includes an area extending north from the Verde River to a line varying from 14 to 23 miles north of the Sante Fe Railway. The Grand Canyon Division includes an area extending 18 miles south of the Grand Canyon National Park. In elevation the forest varies from 3,800 feet to 10,418 feet above sea level.

History

Modern developments in the Tusayan National Forest region began with the building of the Atlantic and Pacific Railroad, now the Sante Fe, in the early eighties. Historically the region is much older and dates from the discovery of the Grand Canyon of the Colorado by Cardenas and a small company of soldiers in the autumn of 1540.

At that time Coronado was camped at the village of Zuni. Desiring to know more about the surrounding country he dispatched Pedro de Tovar into the Hopi land to the north, along what is now the Little Colorado River. Onate later named the river Colorado because of the reddish color of the soil along its banks, Colorado being Spanish for red. While on the expedition De Tovar heard many tales from the Hopis concerning a great gorge and river to the north. This rumor led to the expedition under Cardenas and the subsequent discovery of the Grand Canyon. The first complete exploration of the Grand Canyon came centuries later under the direction of Maj. J. W. Powell, a noted ethnologist and geologist. At this time the canyon was thoroughly explored in boats built especially for the trip. It was an undertaking of supreme danger and will live as a distinguished feat of pioneer history.

Forest Resources

Timber

The net area of the Tusayan National Forest is 1,230,798 acres. Two timber types are found, the saw-timber and woodland. The saw-timber forest is almost

pure pine, and the ponderosa pine the principal tree. This type covers 450,000 acres and the stand is estimated at 790,000,000 board feet. The woodland type, made up of various species of juniper and pinon, covers 780,450 acres, and is valuable for the production of fuel wood and posts. The stand is estimated at 1,047,000 cords and approximately a million posts.



Sawmills are the mainstay of many towns

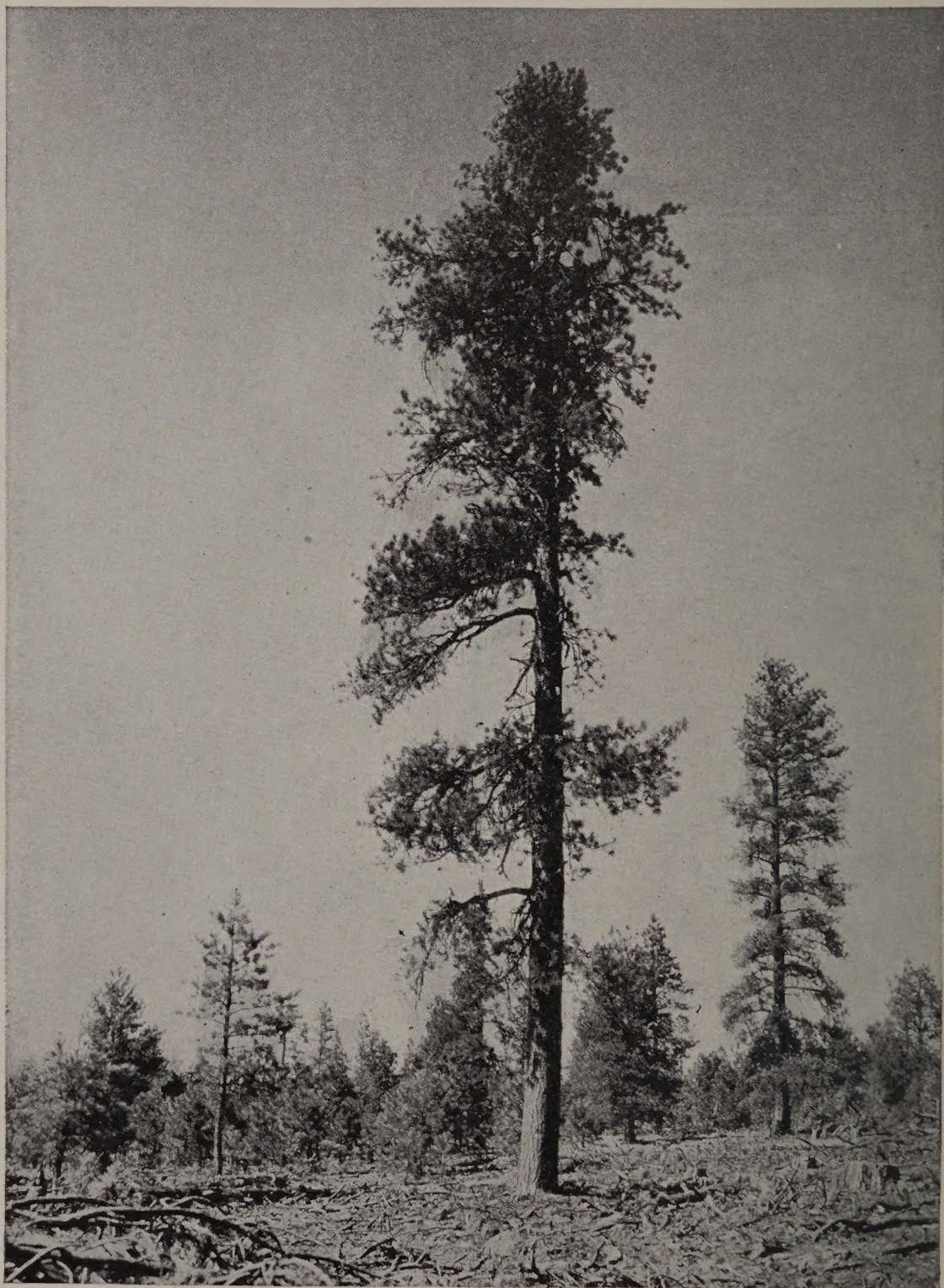
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Logging operations on a fairly large scale started on this forest in 1893 when the first mill was established at Williams and a considerable area was cut over prior to the creation of the national forest. On this area regulated cutting was not practiced and, as a result, many young, thrifty trees, which under our present system of regulated cutting would have been reserved for a second crop, were removed. This mill now cuts from 25,000,000 to 30,000,000 board feet of timber from the forest annually. Because of the previous heavy cutting, the life and size of this operation is limited. There will be a period of several years when the remaining pockets of timber, not reached by the present mill, will be cut by small, portable mills. When the second cropping starts it will be handled on a sustained-yield basis, and the operation of one fairly large mill may be continued indefinitely.

The woodland stand has furnished many thousands of cords of firewood and many thousands of posts for use in Arizona and California. At the present time the demand for cordwood is limited, but there is a strong demand for posts.

The purpose behind all timber cutting on the national

forests is to leave the cut-over area in a productive condition so as to insure future timber crops. The timber stands on the forest contain material of all ages from small seedlings to overmature and decadent trees. Only the mature and overmature trees are removed. Thrifty, young trees, and, where necessary, seed trees are left to seed up the cut-over area for further growth and future cutting. This method of harvesting the timber insures another cut on the same land in from 60 to 75 years.



Regulated timber cutting insures future crops F-221233

The highest use of the accessible timberland in the forest is for the production of timber crops. To insure and to stabilize permanent timber operations, management plans have been prepared and approved.

Grass

One of the most important industries of northern Arizona is stock raising. The Tusayan National Forest issues permits each year covering the grazing of 18,700 head of cattle and horses and 66,000 head of sheep. A large number of local work and milk stock are grazed free of charge.

An intensive survey has been made of the range resource of the forest, including all the factors that enter into its proper use. The facts accumulated have been used as a basis for a range management plan for each natural grazing unit. The principal objects of these plans are to improve the forage and other forest conditions on areas that have suffered from past abuse, to maintain the ranges, forests, and watersheds in a productive condition, and to harvest the forage crop annually on a sustained-yield basis in such a way that it contributes to a permanent, profitable, livestock business. These plans show for each range unit whether it is better suited to sheep or to cattle, the number of such stock for which sufficient forage will be provided each year, the season during which the forage can best be utilized, and



Over 18,000 cattle graze on the Tusayan Forest F-43229A

the methods of handling the stock on the range. They show also what range improvements are necessary to obtain the highest possible use of the native feed consistent with the permanent maintenance of the forage crop and the proper safeguarding of other interrelated resources and interests.

Watershed Protection and Recreation

The forest not only produces a continuous supply of timber and forage which furnishes the raw material for

industries that support a number of towns and homes for a considerable number of settlers, but also provides watershed protection and recreational opportunities to local residents and tourists.

The entire forest is open to use and occupancy under the regulations promulgated by the Secretary of Agriculture, and legitimate use and occupancy are encouraged. The wide altitudinal range of the Tusayan National Forest affords a variety of flora and fauna attractive to the botanist and nature lover. Caution is necessary against the general and excessive gathering of wild flowers, while removal of transplants, including cactus is allowable only under permit and not for commercial purposes.

Game

The Tusayan National Forest furnishes a great deal of recreation in the form of hunting. Deer, turkey, and squirrels are the principal game animals the hunting of which is allowed. The hunting of mountain lion furnishes excellent sport. Deer and turkey are plentiful within the Coconino-Yavapai Game Refuge and can nearly always be seen along the road to Sycamore Canyon. There are several small herds of pronghorn antelope within the forest, and a few elk. Both species are, however, protected yearlong from hunting and will continue to be protected until they become sufficiently numerous to justify an open season.

Deer are essentially browse-eating animals and subsist chiefly on the leaves and twigs of such plants as juniper, oaks, garrya mountain mahogany, and cliff rose. Trees and browse plants produce new shoots and leaves each year, a certain amount of which may be eaten by game without damage to the growth and development of the plant. But if an excess is taken annually the plant loses its vigor and in a few years dies. Overpopulation of deer is reflected readily in the overbrowsed condition of the plants upon which they feed. Trees and shrubs are slow-growing plants and unless there are new plants coming in to replace the injured or decadent ones the volume of forage will decrease at a very rapid rate and leave the animals dependent upon a range with insufficient feed. Poor condition of the animals with starvation of at least a part of the herd will be the inevitable result. The larger plants or trees like juniper, which furnish one of the most important sources of deer feed, are browsed as high as an adult deer can reach, usually about $5\frac{1}{2}$ feet. An occasional tree trimmed up by game is not an indication of overpopulation, but if the condition is widespread it shows that the numbers are excessive. The

trees may not be seriously injured since such browsing serves only to kill the lower branches. However, the lower branches can not be replaced and the range will thereafter carry proportionately fewer animals. With the range already overstocked, as it must be when this condition occurs, the surplus animals must perish through starvation unless corrective measures are applied to reduce the herd to such a number that the amount of feed available will be sufficient for their needs.

By far the most serious problem resulting from the depletion through excessive use of trees and shrubs by deer and other browse-eating game animals is the immediate effect upon the herd itself and the loss by starvation of the younger and weaker animals. The saving of the deer from themselves, however, is by no means the whole problem. The welfare of many birds is also jeopardized. Game birds, such as turkey, quail, and grouse, as well as many song birds, depend for their winter feed almost entirely upon pinon nuts, juniper berries, oak mast, and other seeds produced by the shrubs and weeds that are browsed by the deer. If these plants are excessively cropped they will not produce a good crop of nuts or seeds. There will also be excessive competition for the oak mast and juniper berries which fall on the ground from trees too tall to be browsed by the deer.



Lower branches browsed off by deer

F-246895

Originally the number of game animals was kept in check by their natural enemies, the predatory animals. Through the influence of man these predators have been greatly reduced. Man also restricted the periods of hunting by game laws and established refuges in which

no hunting is allowed. These protective measures have had the salutary effect of greatly increasing the diminished herds, and in some areas have multiplied numbers beyond the capacity of the range to furnish feed. Since man has effectively influenced the restoration of certain game species, he must likewise maintain the proper balance not only between species but also between wild life and the plant life necessary for the subsistence of animals and birds. A game survey is made from time to time and this problem studied so that the proper remedy can be determined in time, and a practicable and efficient plan of game management formulated. Some of the obvious remedies, where an overpopulation of deer occurs, are: Opening refuges to hunting; trapping and transporting some of the animals to regions where there is a deficiency; a larger bag limit and a longer hunting season; and if these remedies fail to remove sufficient animals, allowing the killing of does.

Game, like domestic livestock, is an important economic resource and should be managed as such. When a herd has reached the capacity of the range the natural increase should be removed annually so that the remaining animals can obtain ample feed and continue to thrive.

Administration

The Tusayan National Forest is divided into five ranger districts, with a district ranger in charge of each, and centralized control in the forest supervisor and his staff at Williams.

During the fire season the force is increased by three fire lookouts located on prominent peaks, two lookout firemen on secondary peaks, and three firemen at strategic points, to assist in the detection and suppression of fires. Road and trail crews are also available and are used when necessary to aid in the suppression of fires. It has been the practice for many years to appoint a number of per diem fireguards, selected from the local settlers, who are paid only when on duty. These guards are instructed to go to any fires in their neighborhood. Excellent service has been rendered by this auxiliary fire force, and many fires have been extinguished while small which might otherwise have become serious before the regular force several miles distant could reach them.

Ranger districts on the Tusayan Forest cover areas varying from 220,000 to 445,000 acres. The district ranger is the business manager of this territory, and has a large variety of duties besides the important task of protecting the forest from fire. He must supervise

timber sales; supervise the grazing of livestock in order that the range may not be overgrazed and cause erosion or stock damage to young timber; build and maintain telephone lines, roads, and trails, and attend to many other kinds of forest business. As he is necessarily in the field a great deal he is able to furnish reliable information to the traveler.



Cedar Glade Ranger Station

F-249804

Information is always gladly given by the forest supervisor in Williams, or by the local district rangers, who are stationed as follows:

Ranger District	Headquarters Post Office
Anita-Moqui.....	{ Summer: Grand Canyon, Ariz. Winter: Bin D, Williams, Ariz.
Chalender.....	{ Summer: Parks, Ariz. Winter: Williams, Ariz.
Spring Valley.....	Williams, Ariz.
Verde.....	Puntenney, Ariz.
Williams.....	Williams, Ariz.

Points of Interest On or Near the Forest

Bill Williams Mountain

While the distance to the summit of Bill Williams is 7 miles, 3 of that 7 miles may be covered by automobile, leaving but 4 miles to hike or go by saddle to the top. Anyone with a day to spare is certainly making a big mistake if he passes up the magnificent view which is to be had from this peak. Bill Williams is by no means the highest peak in the State, but it commands a breadth of view to the south, west, and north which can hardly be equalled by that from any other peak. It is located at the edge of the great San Franciscan Plateau, and the country drops off 5,000 feet in 20 miles. On clear days mountains in Mexico and California can be sighted south

and west, while the north rim of the Grand Canyon stands out plainly to the north, 80 miles away. Be sure to take along a canteen of water; a bit of lunch will also be found welcome at the top. Simply take the road south of Williams by Lake Sante Fe, turn to the right at Benham's Road, and follow the forest signs.



Lookout tower on Bill Williams Mountain

F-156722

Sycamore Canyon

Anyone stopping in Williams should take the drive to the rim of Sycamore, "Little Grand Canyon" as many call it, with good reason. As a matter of fact, in the Sycamore the Grand Canyon is reproduced on a smaller scale, with the same colorings of rock, and the same type of natural sculpture. The road to this attraction branches off from the Bill Williams Loop Drive, at a point 8 miles south of town, swinging to the left. The distance to the rim is 25 miles and the road leads right to the very brink of Merrill Point, which gives the visitor a commanding view of the canyon. Cliff dwellings in a perfect state of preservation have recently been found in the Sycamore Canyon and may be reached by a short hike. The road passes within a quarter of a mile of J. D. Dam, also, where good fishing is to be had.

This, like the other roads in the forest, is well marked with forest signboards so that it is easy to follow.

The Loop Drive

There is a good forest auto road leading all the way around Bill Williams Mountain. It leads through virgin pine forest a good part of the way, and is lined with thrifty, new growth for most of the remaining distance, about 30 miles in all. It winds about, in and out, through mountain and forest with new thrills and inspiring views waiting around each turn of the road. It passes the Bill Williams Trail, the branch road to J. D. Lake, borders beautiful Coleman Lake where Indian hieroglyphics are to be found, and crosses the historic Hell's Canyon. The road finally emerges from the forest upon a high mesa which commands a breath-taking view of the desert stretching out miles and miles below to west and south. It is a drive that never grows old though taken time and time again.



Trails are great aid in reaching fires quickly

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Fire Prevention

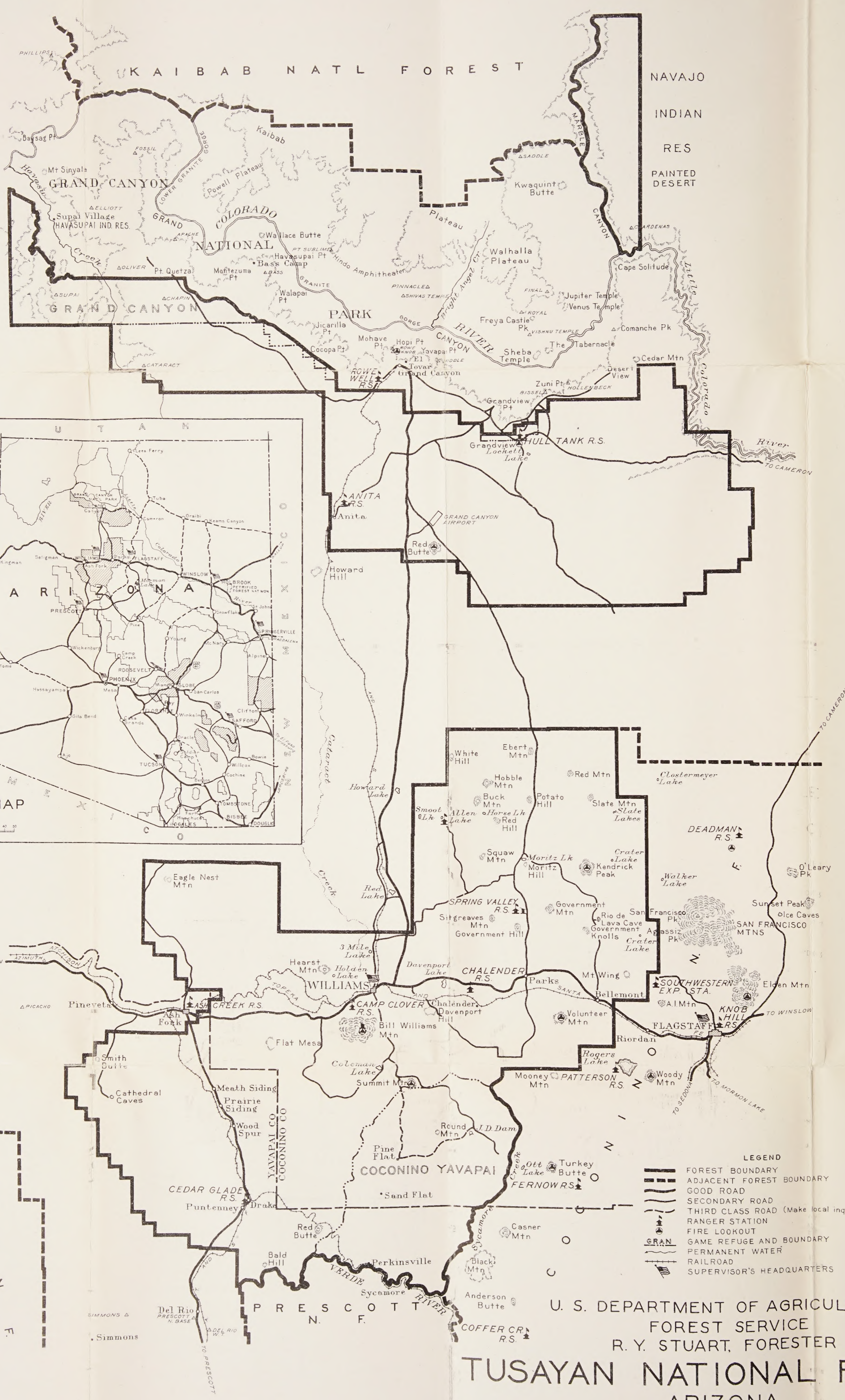
Fire is the forest's greatest enemy, and most fires are started through carelessness in the use of matches, cigarettes, and camp fires. Therefore, while traveling through the forest, be sure that your match, cigarette, or cigar is out before disposing of it. Before building a camp fire clear a space about 5 feet in diameter, and in the center dig a pit about 8 inches deep by 15 inches in

diameter. Then build the fire in this pit and there will be little danger of the wind blowing sparks out into inflammable material. Before leaving camp, the fire should be thoroughly quenched with water, or covered and packed well with soil without any leaves or twigs in it. If a fire accidentally gets away it can usually be whipped out while small with a wet sack, or a pine or fir branch. If in heavy forest duff, a trench 10 or 12 inches wide should be dug with a shovel around the burning area, care being taken to reach clean earth in the bottom of the trench. If the fire becomes too large to handle, the nearest forest officer should be notified at once. Every camper should carry a serviceable shovel and a light ax for such emergencies and to use in camp to prepare a proper camp fire, to trench around the tent, and to chop fuel.

As the national forests are public property, it is your duty to assist in keeping fire out and to keep them green in order that everyone may enjoy them and that they may continue to be an asset to the State and Nation.

SIX RULES FOR PREVENTING FIRE IN THE FORESTS

1. *Matches.*—Be sure your match is out. Break it in two before you throw it away.
2. *Tobacco.*—Be sure that pipe ashes and cigar or cigarette stubs are dead before throwing them away. Never throw them into brush, leaves, or needles.
3. *Making camp.*—Before building a fire, scrape away all inflammable material from a spot 5 feet in diameter. Dig a hole in the center and in it build your camp fire. Keep your fire small. Never build it against trees or logs or near brush.
4. *Breaking camp.*—Never break camp until your fire is out—dead out.
5. *Brush burning.*—Never burn slash or brush in windy weather or while there is the slightest danger that the fire will get away.
6. *How to put out a camp fire.*—Stir the coals while soaking them with water. Turn small sticks and drench both sides. Wet the ground around the fire. If you can't get water stir in earth and tread it down until packed tight over and around the fire. Be sure the last spark is dead.



NAVAJO
INDIAN
RES
PAINTED
DESERT

KEY MAP

- LEGEND
- FOREST BOUNDARY
 - ADJACENT FOREST BOUNDARY
 - GOOD ROAD
 - SECONDARY ROAD
 - THIRD CLASS ROAD (Make local inquiry)
 - RANGER STATION
 - FIRE LOOKOUT
 - GAME REFUGE AND BOUNDARY
 - PERMANENT WATER
 - RAILROAD
 - SUPERVISOR'S HEADQUARTERS

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R. Y. STUART, FORESTER
TUSAYAN NATIONAL FOREST
ARIZONA

